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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/611,961

07/03/2003

Shinji Yokono

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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

01/03/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/611,961	<b>Applicant(s)</b> YOKONO ET AL.	
	<b>Examiner</b> Jimmy Lin	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/2007 has been entered.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5-6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi et al. (WO 98/27570, references made are to the English equivalent U.S. Publication No. 2002/009536) in view of KR 1999-85889, Nishiyama et al. (U.S. Patent 6,797,975), Suzuki et al. (U.S. Publication No. 2002/0038822).

Iguchi discloses a method of making a plasma display panel (PDP), wherein phosphor paste is printed between barrier ribs. The barrier ribs separate the PDP substrate into a plurality of cells (abstract; Fig. 1).

Iguchi does not explicitly teach an inspection method. However, '889 teaches a method of inspecting a PDP, wherein an inspection takes place after the printing of each phosphor R, G, and B. If the printed condition of the phosphor is determined to be poor, the phosphor is removed. The substrate is returned to the beginning of the process to reprint the phosphor materials (abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the phosphors of Iguchi using the inspection method of '889. One would have been motivated to do so in order to increase the production yield and reduce manufacturing cost of PDPs (abstract).

'889 teaches that some sort of inspection is required to determine the condition of the printed phosphor, but does not explicitly teach that inspection method comprises radiating visible light onto the surface of the phosphor and observing the reflected pattern of light reflected. However, Nishiyama teaches that a PDP can be inspected for pattern defects using white light (i.e., radiating the white light onto the surface and observing the reflected light) (col. 5, lines 7-50). The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the phosphor of Iguchi and '889 using the method of Nishiyama with a reasonable expectation of success because Nishiyama teaches that such an inspection method is suitable for detecting pattern defects and because the inspection method of '889 necessarily requires some sort of inspection process.

Iguchi, '889, and Nishiyama do not explicitly teach that the phosphor is inspected before drying. However, the selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See, for instance, *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have radiated the light onto the phosphor material *prior* to drying instead of radiating the light onto the phosphor material *after* drying with the expectation of similar results and with a reasonable expectation of success because the detection of flaws is possible before or after drying the phosphor material.

Iguchi, '889, and Nishiyama do not explicitly teach wherein the inspecting step determines whether or not an amount of the phosphor material in each of the cells is a suitable amount in accordance with an intensity distribution of reflected light in each of said cells. However, Iguchi does recognize the need for forming a uniformly thick phosphor layer in order to achieve higher uniformity in luminance and display. A phosphor layer not uniformly thick is essentially a phosphor layer that has portions that is either excessive or small. One of ordinary skill in the art would have expected the flaws found in the deposited phosphor material prior to drying to carry over after the drying of the phosphor material. For example, Suzuki teaches that deposited phosphor overflowing into an adjacent cell was a well known defect in the art of ejecting a phosphor onto a PDP substrate [0112],[0121]. The overflow of phosphors would at

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least cause phosphor to be deposited onto the top surface of the barrier ribs. One of ordinary skill in the art would have expected that the defect of the phosphor being deposited on the top surface of the barrier ribs prior to drying would have carried over after the drying step. Because Iguchi teaches the need for uniformly thick phosphor layers in each cell and because overflow of phosphor into adjacent cells would have created a nonuniformity in thickness, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected the PDP substrate of Iguchi for overflow of a cell and deposition of phosphor onto the upper portion of the barrier ribs prior to drying with a reasonable expectation of success. Overflow of phosphor onto the barrier ribs would necessarily cause a different reflection of light intensity as compared to barrier ribs without phosphor being deposited thereon.

Claim 5: The inspection must necessarily have some sort of basis of comparison (i.e., a previously inspected PDP substrate).

Claim 6: Iguchi teaches that one phosphor color can be applied at a time [0263]. '889 teaches that an inspection step takes for each deposition steps of the phosphor materials R, G, and B (abstract). Previous inspections of the same substrate is taken into account such that having no flaws found up to the point of the current inspection is noted.

Claim 8: Iguchi teaches that the phosphor paste can be applied by a printing technique (Figs. 1,5-8).

4. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi '570 in view of KR 1999-85889, Nishiyama '975, and Suzuki '822 as applied to claim 1 above, and further in view of Isberg et al. (U.S. Patent No. 5,998,085).

Iguchi, '889, Nishiyama, and Suzuki are discussed above. Nishiyama teaches that pattern defects can be detected, but does not explicitly teach that the defect can be a pinhole. However, Isberg teaches that pinholes in a phosphor layer are a known pattern defect for PDPs (col. 1, lines 50-54; col. 2, lines 13-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have inspected for pinholes in the PDP phosphor layer of Iguchi with a reasonable expectation of success because Nishiyama teaches the inspection of pattern defects and because Isberg teaches that pinholes were well-known pattern defects. The intensity

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of the light reflected from a layer with a pinhole would necessarily have a different intensity of light from a normal layer without a pinhole.

Suzuki teaches that overflow of a phosphor into an adjacent cell was a well known defect in the art of PDPs, as discussed above.

Claim 4: A pinhole can be interpreted to be a micro-defect. Phosphors flowing into an adjacent cell can be considered a macro-defect.

5. Claims 1, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iguchi '570 in view of Suzuki '822.

Iguchi discloses a method of making a PDP and Suzuki teaches that overflow of a phosphor was a well known pattern defect as discussed above, but they do not explicitly teach the step of inspecting in accordance with an intensity distribution of reflected light the cells. However, an operator or engineer walking through the manufacturing process can take a look at the phosphor layer that has been applied to PDP substrate prior to drying. Such a walk-through is typical in manufacturing plants to ensure that the product line is operating properly. In addition, a sample could be taken off the product line after the application of the phosphor and prior to drying in order to observe the quality of the deposition process. In either case, some sort of visible light must be provided so that the PDP substrate can be observed, and this light will necessarily reflect off the phosphor layer. If some phosphor had overflowed out of a cell, the observer would take notice of the defect. Overflow of phosphor onto the barrier ribs would necessarily cause a different reflection of light intensity as compared to barrier ribs without phosphor being deposited thereon.

Claim 5: The observer must have some sort of comparison when determining that the phosphor amount applied is suitable. The comparison could be made relative to previously seen PDP substrates.

#### ***Response to Arguments***

6. Applicant's arguments filed 6/4/2007 have been fully considered but they are not persuasive.

Applicant argues on pg. 6 that the prior art of record does not teach or suggest the inspection of the applied phosphor materials in each cell is a suitable amount in accordance with an intensity distribution of reflected light in each of the cells. However, the intensity of reflected light on an object varies depending on the particular shape of the object. Because Nishiyama teaches that visible light can be used for inspection, the defect of phosphors overflowing into adjacent cells as taught in Suzuki would cause some phosphor to be deposited onto the upper portion of the barrier ribs. The portion of this barrier rib would necessarily have a different intensity of reflected light as compared to a barrier rib without phosphor deposited thereon. This difference in light intensity would indicate a pattern defect.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hamamatsu et al. (U.S. Publication No. 2002/0122174) correlates the intensity of reflected light with scattered light caused by a pinhole ([0091]; Figs. 3-4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

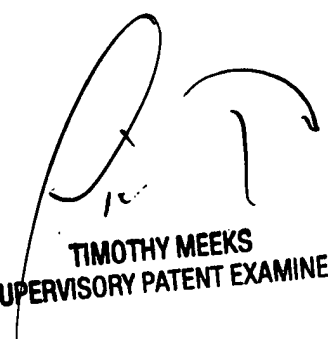
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**